WHAT IS CLAIMED IS:

1   1.   A system for reordering data packets in a packet switch network, wherein
2   a plurality of source processors transmit the data packets to a destination processor via
3   multiple communication fabrics, and wherein the source processors and the destination
4   processor are synchronized, the system comprising:
5   time stamp logic at each source processor that operates to include a time stamp
6   parameter with each of the data packets transmitted from the source processors;
7   a plurality of memory queues located at the destination processor;
8   an Enqueue processor coupled to the plurality of memory queues and located at
9   the destination processor, wherein the Enqueue processor operates to store a memory
10   pointer and an associated time stamp parameter for each of the data packets received at
11   the destination processor in a selected memory queue; and
12   a Dequeue processor coupled to the plurality of memory queues and operable to
13   access the plurality of memory queues to determine a selected memory pointer associated
14   with a selected time stamp parameter, and wherein the Dequeue processor operates to
15   process the selected memory pointer to access a selected data packet for output in a
16   reordered packet stream.

1   2.   The system of claim 1, wherein the source processors and the destination
2   processor are synchronized to an external synchronization signal.

1   3.   The system of claim 1, wherein the plurality of memory queues are
2   associated with the multiple communication fabrics, wherein there is at least one memory
3   queue per communication fabric.

1   4.   The system of claim 1, wherein the Enqueue processor is operable to store
2   each of the data packets received at the destination processor in a memory at a location
3   defined by the memory pointer.

1   5.   The system of claim 1, wherein each of the plurality of memory queues is
2   a first-in-first-out memory that includes a queue output, and wherein the Dequeue
3   processor accesses the queue outputs to determine the selected memory pointer

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4   associated with the selected time stamp parameter.

1   6.   The system of claim 5, wherein the selected time stamp parameter is the

2   earliest time stamp parameter at the queue outputs.

1   7.   The system of claim 1, wherein the Dequeue processor waits a selected

2   delay period defined by the difference between the current time and the selected time

3   stamp parameter before accessing the selected received data packet.

1   8.   The system of claim 1, wherein the source processors add a priority level

2   indicator to each of the transmitted data packets, wherein the priority level indicator is

3   chosen from selected priority levels.

1   9.   The system of claim 8, wherein the plurality of memory queues are

2   associated with the multiple communication fabrics and the selected priority levels, and

3   wherein the total number of the memory queues is equal to the number of communication

4   fabrics times the number of selected priority levels.

1   10.   The system of claim 9, wherein the Dequeue processor is operable to

2   determine the earliest time stamp parameter at the queue outputs associated with the

3   highest priority level.

1   11.   A method for reordering data packets in a packet switch network, wherein

2   a plurality of source processors transmit the data packets to a destination processor via

3   multiple communication fabrics, and wherein the source processors and the destination

4   processor are synchronized, the method comprising steps of:

5   including a time stamp parameter with each of the data packets before they are

6   transmitted from the source processors;

7   defining a plurality of memory queues located at the destination processor;

8   storing a memory pointer and a time stamp parameter associated with each of the

9   data packets received at the destination processor in a selected one of the memory

10   queues; and

11   determining, from the plurality of memory queues, a selected memory pointer

12   associated with a selected time stamp parameter; and

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13   processing the selected memory pointer to access a selected data packet for output

14   in a reordered packet stream.

1   12.   The method of claim 11, further comprising a step of waiting for a

2   selected time period determined by a difference between a current time and the selected

3   time stamp parameter before performing the step of processing.

1   13.   The method of claim 11, further comprising a step of including a priority

2   value with each of the data packets before they are transmitted by the source processors.

1   14.   The method of claim 13, wherein the step of determining is a step of

2   determining, from a portion of the plurality of memory queues, the selected memory

3   pointer associated with the selected time stamp parameter, wherein the portion of the

4   plurality of memory queues is associated with a selected priority value.

1   15.   The method of claim 11, wherein the step of defining comprises a step of

2   defining the plurality of memory queues so that there are as many memory queues as

3   there are network fabrics.

1   16.   The method of claim 11, wherein the step of including further comprises a

2   step of including a priority level indicator with each of the data packets before they are

3   transmitted from the source processors, wherein the priority level indicator is chosen

4   from selected priority levels.

1   17.   The method of claim 16, wherein the step of defining comprises a step of

2   defining the plurality of memory queues so that the total number of memory queues is

3   equal to the number of communication fabrics times the number of selected priority

4   levels.

1   18.   The method of claim 11, wherein the step of determining is a step of

2   determining, from the plurality of memory queues, a selected memory pointer associated

3   with a selected time stamp parameter, wherein the selected time stamp parameter is the

4   earliest time stamp parameter.

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